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ABSTRACT

A study investigated whether students who are given experience in writing would improve the quality of their writing over the course of an academic year, and whether the amount of improvement would be associated with the amount of instructional writing experience across the curriculum. A 50-minute essay exam designed to assess writing skills was administered at the beginning of the fall term and again at the end of the spring term to 113 students in composition classes at 3 colleges in the Minnesota Community College System. Results showed that students given experience in writing improved the quality of their writing over the course of the academic year (with the gain quite consistent across grade-point-average groups), and that gains in writing quality increased according to the amount of instructional writing experience. A pilot study explored a subsidiary hypothesis that the quality of instructional activities would also contribute to gains in the quality of students' writing. Findings suggest that the quality of writing assignments is likely to be more important than the number of writing assignments students are given. Further writing across the curriculum research should concentrate on identifying features of assignment design which optimize student learning, and on developing a systematic procedure for rating the quality of instructional assignments based on these features. (Three tables of data are included; the essay question and a holistic scoring guide are attached.) (SR)

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"The Relationship Between Instructional Writing Experience and the Quality of Student Writing: Results from a Longitudinal Study in the Minnesota Community College System"

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PAPER SESSION
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Do students who experience instructional writing across the curriculum improve the quality of their writing over the course of an academic year? If so, is this improvement related to the amount of instructional writing they receive? Is it related to the quality of instructional writing assignments and their integration into other course activities? This presentation will describe a longitudinal study conducted in the Minnesota Community College System designed to answer these questions. The study was part of an evaluation of a Writing Across the Curriculum (WAC) faculty development program.

A major assumption of WAC is that, by writing in a variety of classes, students will become better writers than if their experience with writing activities is limited to classes in English and composition. The theory underlying this assumption is that, by writing in a number of disciplines, students will do more writing, and will write using different formats and with different purposes, than they would otherwise; and that this increase in the amount and variety of writing will result in an improvement in the quality of writing. Since writing competence may improve slowly, students were tested for the cumulative effects of writing over the course of an academic year.

The study was conducted to test the hypotheses that students who are given experience in writing: 1) will improve the quality of their writing over the course of an academic year; and 2) the amount of improvement in the quality of their writing will be associated with their amount of instructional writing experience across the curriculum. In addition, a subsidiary pilot study was conducted to explore the hypothesis that the quality of instructional writing activities also correlates with improvement in the quality of writing. The pilot was conducted because cross-sectional and case study results obtained earlier in the grant suggested that it is not the amount of writing, but the design and/or implementation of those activities, that has the most impact on students.

METHOD AND SOURCES OF DATA: A 50-minute essay exam designed to assess writing skills was administered at the beginning of fall term and again at the end of spring term to students in composition classes at three colleges in the Minnesota Community College System. This resulted in pairs of pre-test and post-test essays from 113 students, which were blind-scored by faculty trained in the use of holistic rating methods. The essay question had received extensive prior use in earlier WAC research; our sample was restricted to first-year students, however, so the question was one the students had not seen previously. Due to the difficulties in finding essay questions of comparable content and difficulty, the same question was used for both pre- and post-

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testing; we assume that the passage of nine months' time between pre- and post-testing rendered carryover effects negligible.

To test hypothesis #1, a single-factor repeated-measures analysis of variance (ANOVA) was conducted to determine whether students improved the quality of their writing over the course of the academic year. Additional analyses were run to investigate how student academic background, ability (as reflected by GPA) and demographics might interact with this gain.

To test hypothesis #2, a measure of instructional writing experience (a "WAC'iness" score) was calculated for each student as the number of non-composition courses that students took from WAC-trained instructors, plus the number of composition courses completed regardless of whether they were taught by WAC or non-WAC instructors. Interaction of students' WAC'iness score with their essay score (the repeated measure) was tested.

A subsidiary hypothesis that the quality of instructional writing activities would also contribute to gains in the quality of students' writing, was explored in a pilot study. Faculty trained in holistic rating methods blind-scored instructional writing assignments and descriptions of how these were implemented in the classrooms of instructors who collected student essays. These "Quality of Writing Assignment" scores were then compared to the means of students' essay ratings from those classes. Since the writing assignments used in the study were available for only 15 of the 37 instructors who collected essays, results were preliminary and suggestive. The pilot study will be described in some detail towards the end of this paper.

Results will be interpreted within a context of findings from related cross-sectional and case studies conducted earlier in the grant.

RESULTS: Hypothesis #1, that students would improve the quality of their writing over the course of an academic year, was confirmed. Post-test essay ratings averaged approximately one-half point higher than pre-test essay ratings on a 12-point scale. This result was statistically significant with $p=.0177$. This gain was quite consistent across GPA groups (null interaction $p=.657$).

Hypothesis #2, that students' gains in quality of writing would increase according to the amount of their instructional writing experience, was supported at the 10% level of probability. This result was enhanced by results from a cross-sectional study conducted earlier in relation to the same WAC program, which showed a significant ($p<.01$) positive correlation between amount of instructional writing and students' essay ratings.

A curious aspect of this finding was that, whereas those who had the least number (2-3) and those who had the most number (6-12) of WAC or composition classes during the year gained about O.75 point each, those having 4-5 classes showed no gains in their

essay ratings. Could this be a plateau effect? We found no academic (e.g. GPA) or demographic feature (e.g. age) that otherwise distinguished students taking 4-5 WAC/composition courses.

There was no interaction between number of composition courses completed and rating gains. This implies that there is a WAC-specific effect - i.e. that the across-the-curriculum experience may be a crucial factor, and that we should not rely on composition courses alone to improve students' writing.

COMPETING HYPOTHESES

a) Concomitant instruction: Students who complete a large number of WAC courses undergo many instructional experiences apart from writing. It is possible that it is concomitant course instruction, aspects of the college environment, or maturation, rather than instructional writing experience, that contributes to improved writing. To see whether that could be the case, we examined the relationship between the absolute number of courses students completed (i.e. the number of non-WAC as well as WAC courses) and gains in essay ratings. Since statistical analysis yielded no interaction effect, we may conclude that concomitant instruction did not serve as a variable.

b) Student characteristics: Since pre-test and post-test essays were completed by the same students, individual differences which might otherwise affect results were controlled. In addition, as reported above, students benefited from WAC experiences equally, regardless of GPA.

c) Instructor characteristics: Since participation in the WAC staff development program was voluntary, there was some concern that WAC faculty might be "better teachers" than non-WAC faculty, and that factors other than their use of instructional writing may have affected student outcomes. One thing that would dampen a potential volunteer effect is that the program involved approximately one-quarter of the 2,000 faculty in the Minnesota Community College System over the six-year grant period - a large and diverse group and an extended time-frame. Also, two case studies conducted earlier in the grant suggest that the amount, type, and quality of writing assignments instructors use are likely to be primarily responsible for the large variability of essay ratings among WAC classes.

NEGATIVE APPLICATION CASE STUDY: A WAC-trained instructor used grammar study instead of instructional writing to teach a composition class. Essays were collected from this and 36 other classes as part of a cross-sectional study. A secondary analysis of essay ratings confirmed a negative hypothesis that the class would score significantly below the mean, despite the fact that the students had an above-average GPA. There is a probability of less than 5% than the result could be due to chance. This case shows that it is not WAC training or the characteristics of participants per se that make a

difference. Voluntary participation in the WAC program may attract better-than-average teachers; but if those teachers do not actually use instructional writing, their students' writing will not improve.

POSITIVE APPLICATION CASE STUDY: An instructor new to the System specifically designed his history and political science classes according to the advice offered in WAC workshops and materials, and by the Keynote presenter Bill Coles. A political science class of his was used as a case study to see whether an exemplary application of WAC principles would result in higher essay ratings. The class received the highest mean rating of the 37 classes analyzed in the cross-sectional study, significant at the .01 level of probability. Although his class had an above-average GPA, his students still did significantly better on their essays even after a statistical adjustment was made for the difference in mean GPA among classes in the sample. This case shows the potential importance of course and assignment design and implementation. It provided the impetus for conducting a subsequent pilot study which would focus on instructional writing assignment variables.

PILOT STUDY ON QUALITY OF WRITING ASSIGNMENTS

The subsidiary hypothesis, that the quality of instructional writing assignments would have an effect on the quality of students' writing, was explored in a pilot study. A formal analysis was not conducted, because there was too much missing data and because there was insufficient time in which to perfect the procedure used for holistically rating the writing assignments. However, in our opinion, the hypothesis received sufficient support from the pilot and from other components of the WAC evaluation to recommend that further, intensive research should focus on the quality of writing assignment variables, and more broadly, on the quality of students' instructional writing experience within a course or program.

Procedure: After scanning materials (syllabi, writing assignments, etc.) and/or information collected by phone from 27 WAC-trained instructors, 14 faculty trained in holistic rating methods constructed a scale which they would then use to rate the quality of instructional writing reflected by those materials. The scale is given in Table 1.

Table 1

INSTRUCTIONAL USE OF WRITING IN THE CLASSROOM

High	6 - Very high quantity and probably high quality 5 - High quantity and probably high quality
Medium	4 - Fair amount of writing with fair-to-good quality (materials provide examples which demonstrate quality) 3 - Fair amount of writing but quality is questionable
Low	2 - Little instructional writing, + quality is questionable 1 - No instructional writing was used
Unratable	X - Can't rate (not enough information)

The raters then examined the materials more closely and independently gave each a score based on the scale descriptions. Materials were coded and instructor name, college, and other identifiers were eliminated to ensure a "blind" rating.

Ratings of instructional materials were then tallied on the blackboard. Descriptions of instructional designs summarized from phone interviews were also rated, but except for instructors who were forthright in saying they used no or little instructional writing (#01, #03, #18, and #19 in Table 2), phone descriptions were generally deemed unreliable and are not included in this report. As you see from Table 2, there was a reasonable degree of preliminary consensus, especially considering that the materials were diverse in discipline and format, and that there was insufficient time for the group to polish the procedure and internalize the criteria.

Table 2

WRITING ASSIGNMENT RATINGS

Materials Code	High	Medium	Low
#21	14		
#22	10	4	
#23	4	10	
#24			14
#25	3	6	3
#26	3	10	1
#27/28		7	7
#29	7	7	
#30	9	5	
#31	10	4	
#32	6	8	
#33	8	5	
#34		7	4
#01	(from phone interview)		"little writing"
#03	"		"little writing"
#18	"		"no writing"
#19	"		"little writing"

Assignment ratings were then given an "eyeball comparison" with the mean essay ratings obtained by students from the classes in which the assignments were given. A more formal analysis did not seem warranted, given the draft quality of the pilot.

Table 3

STUDENT ESSAY RATINGS
(For top six and bottom six ranked classes)

Rank Order of Class Mean	Classes Represented by Instructional Materials Code	Materials Rating
#1	#22	Hi
#2	NA	*
#3	NA	*
#4	NA	*
#5	NA	*
#6	#21	Hi
#32	#27/28	Med-to-Lo
#33	#24	Lo
#34	#33	Hi-to-Med
#35	#29	Hi-to-Med
#36	#18	Lo
#37	#01	Lo

Analysis and Findings: The 37 classes involved in an earlier cross-sectional study were rank ordered by mean essay rating. The top six and bottom six classes were examined to see whether they differed markedly in writing assignment ratings (Table 3). The classes ranked first and sixth were two of the three which received the highest assignment ratings. (Essay ratings were not available for the third.) We were unable to collect assignment materials from the other high-ranking classes. However, the fourth highest-ranking class was taught by an instructor who had had an assignment published in a WAC Handbook as an exemplar of good design.

Assignment ratings were available for all of the six classes which received the lowest mean student essay ratings. The classes which ranked 33rd, 36th, and 37th on essay ratings were among the five given "low" consensus ratings on assignment design. The class ranked 32nd used materials #27/28 in Table 2, which received medium-to-low ratings. The 34th-ranked class used materials #33, which as you see in Table 2, received high-to-medium ratings. However, that class (the 34th-ranked) was a developmental education class, with students who had the lowest mean GPA in the sample.

The only class whose essay results were in clear contradiction to expectations was the 35th-ranked class. That one's materials (#29 in Table 2) were rated high-to-medium; yet its mean essay ratings were third-lowest in the sample. The class ranked 26th in GPA - well below the mean for the sample, but not low enough to provide an excuse!

Materials #3, #19, #23, #25, #26, #30, #31, and #32 were unaccounted for by the top and bottom six classes. Essays were not collected from the classes which used materials #30 and #31, so we must exclude them from this analysis. Materials #23, #25, and #26 received strong "medium" ratings; and materials #32 scored medium-to-high. Since these classes achieved mean essay ratings which ranked in the middle two-thirds of the 37 classes in the sample, their materials scores were compatible with their essay scores.

Materials #3 and #19 received "low" ratings. Although the chemistry and health classes which used these materials obtained essay ratings which ranked in the middle two-thirds of the classes involved, students' writing performance was lower than might be expected from their GPA's. The chemistry class had the highest mean GPA of those in the sample; yet the class ranked 25th on their essay ratings. The health class ranked 15th in GPA but 26th in essay ratings.

CONCLUSIONS

Results of the longitudinal study indicate that Writing Across the Curriculum programs have the potential to improve the quality of writing for students of all levels of academic ability. This conclusion is more convincing in the context of an earlier cross-sectional study conducted in conjunction with the same program. However, results from an accompanying pilot study and from earlier case studies suggest that the quality of writing assignments is likely to be more important than the number of writing assignments students are given. If this is true, WAC programs need to go beyond encouraging faculty to use instructional writing in their courses; they need to teach faculty how to design courses and writing assignments according to quality characteristics. To do that, we must have a better understanding of what these "quality characteristics" are. Further WAC research should concentrate on identifying the features of assignment design which optimize student learning, and on developing a systemmatic procedure for rating the quality of instructional assignments based on these features. Then and only then will we have a comprehensive basis for assessing and maximizing the effectiveness of WAC programs.

ESSAY QUESTION

IN-CLASS ESSAY: Read the quotation below and the directions for the essay that follow ALL THE WAY THROUGH BEFORE you begin your essay. You may make a scratch outline to write from, but you need to pace yourself so that you COMPLETE THE ESSAY DURING THIS CLASS SESSION. Use your best English so that you do NOT need to recopy your essay before you hand it in. Cross-outs and minor editing are acceptable.

> "We all love to instruct, though we can teach only what is not worth knowing."

This statement raises several questions about the nature of learning and the value of what can be learned and taught.

Think about YOUR attempts to "teach" someone something. Your role as a teacher might have been quite subtle. Maybe you and your sister spent some desperate moments together in a hospital waiting room while your mother underwent serious surgery, and you talked to your sister about how to handle feelings. Or you might actually have been a teacher of a class, a camp counselor, or math tutor. Perhaps you taught the child you babysat to shoot baskets.

CHOOSE ONE SPECIFIC INSTANCE in which you were a "teacher" and write an essay in which you:

---DESCRIBE the experience clearly.

---EXPLAIN to what extent you were able to convey what you understood or what you knew how to do.
(What COULD you teach? What COULDN'T you teach? WHY couldn't you teach it? Was what you COULD teach "worth knowing"? Was what you COULDN'T teach worth more? If so, how?)

---DISCUSS how the quotation, "We all love to instruct, though we can teach only what is not worth knowing" might apply to your own teaching and learning.

Final Version

(Revised Feb. '87)

WAC EVALUATION PROJECT
HOLISTIC SCORING GUIDE FOR AUSTEN QUESTION

In scoring this assignment, we should reward students for what they have done well, keeping in mind that this is first-draft writing on an assignment which they have just received.

Students are asked to do three things: 1) to describe a situation in which they taught something; 2) to explain the extent to which they were able to convey what they were teaching (Note: good writers will also evaluate); and 3) to discuss how the given quotation might apply to what one can learn. These tasks do not have to be handled separately, but may be integrated in the organization of the essay.

UPPER-HALF PAPERS:

The "6" paper has all the characteristics of the "5" paper, except that it will make more effective use of the quotation. It will also be stylistically impressive, exhibiting unity of tone and point of view, greater depth of analysis, and some originality. There will be no distracting mechanical errors in this paper.

THE "5" PAPER completes all the tasks, although the discussion of the quotation may be less well-developed than the description and explanation. Using specific details, the essay will describe a particular kind of teaching experience, not necessarily a single instance of teaching. The explanation will go beyond a narrow, literal reading of the assignment and will lead into an evaluative discussion of the quotation. The discussion will show an understanding of the quotation and its relationship to what one can learn; the student may deny the applicability of the quotation. The paper will have clear organization, good transitions, and will be generally free from distracting errors of grammar, diction, spelling and punctuation.

The "4" paper has a good description and at least an adequate evaluation of the teaching experience, but the discussion of the quotation may be weak. This paper will be less coherent than the "5" paper, with unclear or missing transitions. The mechanics will be competent but smudged by a few noticeable errors.

LOWER-HALF PAPERS:

Even though it may address all of the assigned tasks, the "3" paper fails to complete one or more of them adequately; OR it will be disorganized, lacking direction and transitions; OR the mechanics will be muddy (tortured syntax, careless diction, poor spelling and punctuation).

THE "2" PAPER attempts to fulfill the assignment but does not actually complete any of the three tasks; OR it will be disorganized; OR the mechanics will be filthy. In terms of not adequately addressing the tasks, it is likely to present a narrow, literal reading of the assignment. It may DESCRIBE an experience at great length without EVALUATING its implications and its relationship to the quotation.

The "1" paper attempts to fulfill the assignment but does not actually complete any of the three tasks, AND it will be disorganized; AND it will have filthy mechanics.

"X" PAPERS:

The "X" paper makes no attempt to do the assignment; the student has written on another topic. Such a paper should get this score no matter how well-written it may be.